भारतीय मानक

Indian Standard

IS 12766 : 2023

कंप्युटर पेपर —विशिष्टि

(दूसरा पुनरीक्षण)

Computer Paper — Specification

(Second Revision)

ICS 35.260.20; 85.080

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January 2023 **Price Group 6**

Paper and its Products Sectional Committee, CHD 15

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards after the draft finalized by the Paper and its Products Sectional Committee, had been approved by the Chemical Division Council.

Computer paper can also be termed as computer stationery, continuous stationery, etc. It is used as a media in the input or output in connection with computer printers or similar machines for recording, reproducing and storage of data.

This standard was originally published in 1989. In first revision, the general requirement was deleted. Also, the requirements for tear index and one minute Cobb value were revised. Modifications were also made in the requirements of punched feed holes, acceptability of printing inks, packing and marking.

Further, in the first revision, a scheme for labelling environment friendly products known as ECO Mark was introduced at the instance of the Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India. The ECO Mark scheme is administered by the Bureau of Indian Standards (BIS).

In this second revision, requirements like Cobb, Tear index, Smoothness have been modified. Test methods have also been updated and amendments have been amalgamated.

The composition of technical committee responsible for formulation of this standard is listed in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values' The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

COMPUTER PAPER — SPECIFICATION

(Second Revision)

1 SCOPE

This standard prescribes requirements and methods of sampling and tests for computer papers for use on computer printers or similar machines for recording, transmitting, reproducing and storage of data.

2 REFERENCES

The Indian Standards listed in below contain provisions which through reference in this text, constitute provisions of this Indian Standard. At the time of publication, the editions indicated were valid. All standards are subject to revisions, and parties to agreements based on this Indian Standard are encouraged to investigate the possibility of applying the most recent editions of the Indian Standards.

IS No.	*Title*
IS 1060	Methods of sampling and test for paper and allied products
(Part 1) : 2022	Test methods for general purpose
(Part 4)	Methods of test for paper board and pulps,
(Sec 3) : 2018	Determination of residue ash on ignition at 900 ºC
(Sec 13) : 2020	Measurement of diffuse blue reflectance factor — Indoor daylight conditions (ISO brightness)
(Part 5)	Methods of test for paper and board,
(Sec 2) : 2021	Determination of moisture content of a lot — Oven-drying method
(Sec 3) : 2014	Determination of thickness density and specific volume
(Sec 4) : 2014	Determination of water absorptiveness — Cobb method
(Sec 5) : 2021	Determination of grammage
(Sec 6) : 2014	Constant rate of elongation method 20 mm min
(Sec 20) : 2018	Determination of roughness smoothness air leak methods — Bendtsen method
(Part 6)	Methods of test for paper,
(Sec 1) : 2014	Determination of tearing resistance — elmendorf method
(Sec 2) : 2014	Determination of bursting strength of paper
IS/ISO 2471 : 2008	Paper and Board Determination of Opacity Paper Backing Diffuse Reflectance Method
IS 4661	Paper board pulps and related terms vocabulary:
(Part 1) : 2022	Alphabetical index
(Part 2) : 2022	Pulping terminology
(Part 3) : 2022	Paper making terminology
(Part 4) : 2022	Paper and board grades and converted products
(Part 5) : 2022	Properties of pulp paper and board

3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions of terms given in IS 4661 (Part 1 to 5) and the following shall apply.

3.1.1 *Continuous Length*

A continuous length of paper in specified sizes folded zig-zag at the required distance in one or more copies for use on computer printers. It can also be made in roll form of specified dimensions.

4 REQUIREMENTS

4.1 Paper

The paper shall be in its natural white colour unless agreed to between the purchaser and the supplier. Computer paper shall be uniform fornation, evenly finished and generally free from specks, holes and other blemishes.

4.1.1 The grammage (substance) of computer paper shall normally be 60 g/m^2, when tested according to the method prescribed in IS 1060 (Part 5/Sec 5) or as agreed to between the purchaser and the supplier. However, the mean of 10 test results shall not vary from the nominal grammage (substance) by more than ± 4 percent, no limit being prescribed for variation in individual test results.

4.1.2 The paper shall accept the printing without any smudge when printed with water, spirit, toluene, xylene or oil based ink.

4.2 Computer paper shall be in one, ‘two, three or four parts respectively folded in a zig-zag (Z-fold) fashion at a distance, prescribed by the purchaser. If desired by the purchaser, each layer of the paper shall be interleaved with the carbon papers.

NOTE — Interleaving of carbon paper can be dispensed with, if the layer of paper are coated chemically such that after writing on the original copy, legible impressions are obtained up to the last copy.

4.3 At the Z-fold, the creases shall be perforated in such a manner that the paper is joined but is capable of separation by an easy jerk.

4.4 At both the sides of computer paper, on the width size, there shall be uniformily punched feed-holes, free from fibres and burrs unless otherwise agreed to between the purchaser and the supplier. The diameter of the feed holes shall be 4.0 mm ± 0.5 mm, at a distance of 12.7 mm ± 0.5 mm from each other and the distance of feed hole centre from the edge of the paper shall be 6.0 mm ± 0.5 mm or as agreed to between the purchaser and the supplier. The average diameter of the feed hole, average distance between the two adjacent feed holes and average distance between the feed hole center and the edge of the paper shall be tested in accordance with the method prescribed in Annex A.

4.5 The purchaser shall specify the size and number of parts in which the computer paper is required. The tolerance in size shall be as per IS 1060 (Part 1). The computer paper in single or multipart, may be printed if so desired by the purchaser.

4.6 Computer paper may also be tinted or printed. In the cases of tinted paper the colour shall be an approximate match to the shade approved by the purchaser. The requirement for brightness, ash content and cobb value shall not apply in the cases of printed computer paper.

4.7 The computer paper shall also comply with the requirements given in Table 1, when tested in accordance with the method referred to in co1 4 of Table 1.

Table 1 Requirements for Computer Paper
(*Clause* 4.7)

Sl No. (1)	Characteristic (2)	Requirement (3)	Methods of test (4)
i)	Bulk,cm^3/g, *Min*	1.2	IS 1060 (Part 5/Sec 3)
ii)	Tensile index, N.m/g, *Min*		IS 1060 (Part 5/Sec 6)
	CD	17	
	MD	25	
iii)	Tear index, mN.m^2/g, *Min*		IS 1060 (Part 6/sec 1)
	MD	3.5	
	CD	4.0	
iv)	Burst index, kPa.m^2/g, *Min*	1.2	IS 1060 (Part 6/Sec2)
v)	One minute Cobb test, g/m^2,*Max*	30	IS 1060 (part 5/sec 4)
vi)	Brightness ISO, percent *Min*	70	IS 1060 (Part 4/sec 13)
vii)	Opacity, percent, *Min*	80	IS/ISO 2471
viii)	Moisture, percent by mass, *Max*	7	IS 1060 (Part 5/Sec 2)
ix)	Ash, percent, *Max*	20	IS 1060 (Part 4/Sec 3)
x)	Smoothness (Bendtsen) for both sides, ml/min, *Max*	300	IS 1060 (Part 5/Sec 20)

NOTES
1 Tensile index = Breaking length x 0.009 g
2 Tear index = Tear factor x 0.098

4.8 Additional Requirements for ECO Mark

4.8.1 *General Requirements*

4.8.1.1 The product shall conform to the requirements for quality and performance prescribed under clauses **4.1** to **4.7**.

4.8.1.2 The manufacturer shall produce to BIS, the environmental consent clearance from the concerned *State Pollution Control Board as per the provisions of Water (Prevention and Control of Pollution) Act*, 1974 and *Air (Prevention and Control of Pollution) Act*, 1981 along with the authorisation, if required, under the *Environment (Protection) Act*, 1986 and the rules made thereunder, while applying for ECO Mark.

4.8.2 Product Specific Requirements

a) The paper and paper boards manufactured out of pulp containing not less than 60 percent by weight of pulp made from materials other than bamboo, hardwoods, softwoods and reed.

b) Recycled paper and paper board must be made from 100 percent waste paper.

5 PACKAGING AND MARKlNG

5.1 The computer paper shall be made into unit folds of 250 (for 3 parts and 4 parts), 500 (for 2 parts) and 1 000 (for 1 part) depending upon the parts of the paper required by the purchaser.

5.2 It shall be packed in 5-ply corrugated cartons to ensure that the paper is not damaged due to handling and transportation or shall be as agreed to between the purchaser and the supplier.

5.2.1 For ECO Mark. the product shall be packed in such packages which shall be recyclable/reusable to biodegradable.

NOTE — Subsequently the parameters evolved for packaging materials/packages for ECO Mark, which are currently being developed shall also apply.

5.3 The package shall be marked with the following particulars:

a) Description and size of the material;
b) Thickness in microns and grammage (substance) in g/m^2;
c) Number of parts (copies);
d) Carbonless or carbon interleaved (not applicable for 1 part stationery);
e) Lot number;
f) No. of sheets;
g) Month and year of manufacture; and
h) Indication of the source of manufacture.

5.3.1 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed there under, and the products may be marked with the Standard Mark.

5.3.2 For ECO Mark, following additional information may also be marked on the container/package:

‘The criteria for which the product has been labelled with ECO Mark’

6 SAMPLING AND CRITERIA FOR CONFORMITY

6.1 The sampling of computer paper shall be done as prescribed in **4** of IS 1060 (Part 1).

6.2 Tests From each of the packets selected from the lot (*see* **6.1**), one sheet shall be taken out at random. These sheets shall constitute the sample. The sheets selected shall first be tested for general requirements given in **4.1** to **4.4**. One test piece shall be cut from each sheet selected for each of the characteristics mentioned in Table 1 and tested. A sheet not meeting the requirements for any one or more characteristics shall be considered as defective.

6.3 Criteria for Conformity

A lot shall be declared as conforming to all the requirements of this specification if the number of defective sheets found does not exceed the acceptance number. This acceptance number shall depend upon the size of the sample and shall be zero if the size is less than 13 and one if it is greater than or equal to 13.

ANNEX A

(*Clause* 4.4)

METHOD OF TEST FOR MEASUREMENT OF FEEDHOLE DIMENSIONS

A-1 GENERAL

To measure the feed hole diameter and other dimensions related to feed hole for a computer paper where permissible tolerance limit is in the range of ± 0.5 mm, it is always preferable to use such instrument which is able to demonstrate accuracy of 0.01 mm.

A-2 OUTLINE OF THE METHOD

In this method computer paper sheet is placed on flat surface and the dimensions are measured by using of Vernier caliper (preferably digital). Measurements for a particular requirement are taken on multiple holes and multiple sheets and the average of all the measurements for each requirement are considered for determination of the conformity of the said requirements.

A-3 Apparatus

A-3.1 Vernier Calipers

With least count of 0.01mm (preferably Digital Vernier Caliper).

A-3.2 Flat Surface Table

A-4 PROCEDURE

A-4.1 Take five sheets from the sample on random basis for measurement of diameter of feed holes and other related dimensions. Place firmly one sheet of paper sample at a time on flat table. During the process of measurement, ensure that the paper sample is neither displaced nor stretched by the pointed jaws of caliper (*see also* NOTES under **A-5.4**).

A-4.2 Feed Hole Diameter (D)

Take one measurement of hole diameter of feed hole (hole selected randomly) by selecting three outer points (randomly) on selected hole as shown in Fig. 1. Similarly take measurement for another feed hole on reverse side of the same sample sheet. Repeat the procedure to determine the diameter of feed hole for other four selected sample sheets (*see also* NOTE 3 under **A- 5.4**).

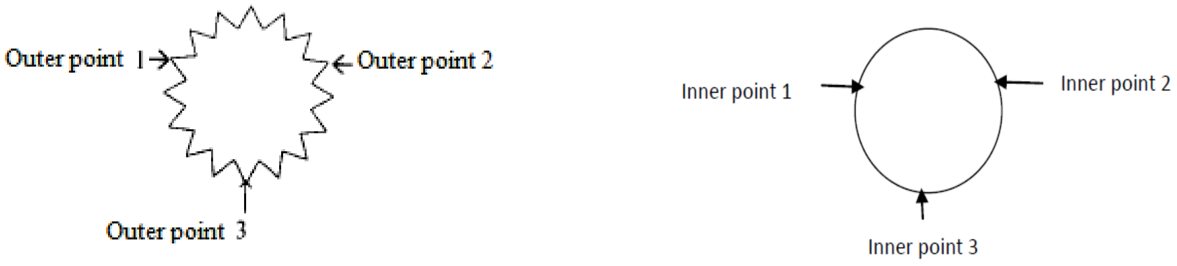

FIG. 1 FEED HOLE DIAMETER

A-4.3 Feed Hole to Feed Hole Distance (L)

Take one sheet of paper and mark an outer point of one feed hole (hole and outer point selected randomly). Measure the distance to the outer point of next adjacent feed hole on the same axis as shown in Fig. 2 with Vernier caliper. Similarly take measurement for other two feed holes on reverse side of the same sample sheet. Repeat the procedure for other four selected sample sheets (*see also* NOTE 3 under **A-5.4**).

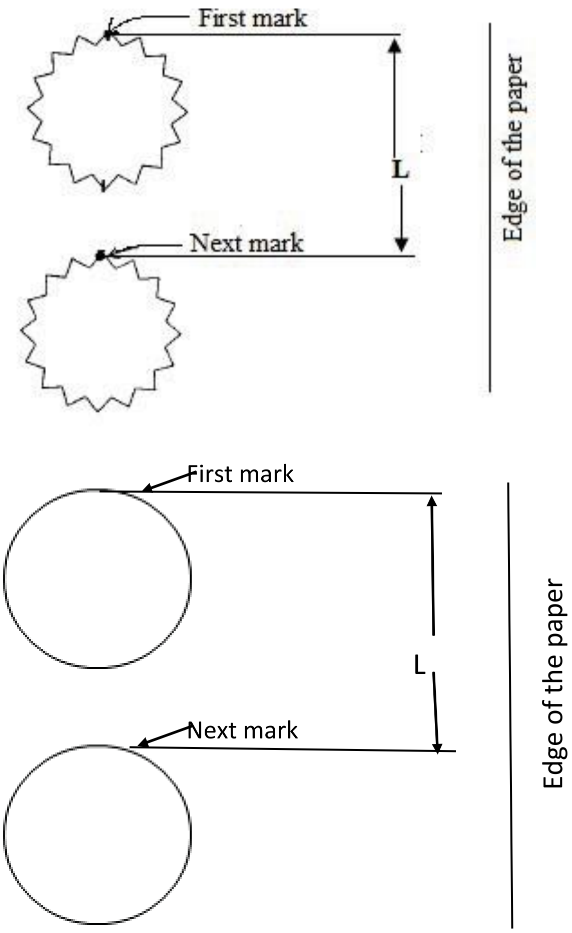

FIG. 2 FEED HOLE DISTANCE

A-4.4 Distance of Feed Hole Centre from the Edge of the Paper (E)

Take one sheet of paper and measure feed hole diameter(D_F) by the method prescribed in **A-3.2** for this sheet only. Mark an outer point of the same feed hole (hole and outer point selected randomly). Measure the distance (E_C) to the edge of the sheet on the same axis as shown in Fig. 3. Similarly take measurement for another feed hole on reverse side of the same sample sheet. Repeat the procedure for other four selected sample sheets. While measuring this dimension it shall be ensured that feed hole diameter (D_F) and E_C shall be measured on the same feed hole (*see* also NOTE 3 under **A-5.4**).

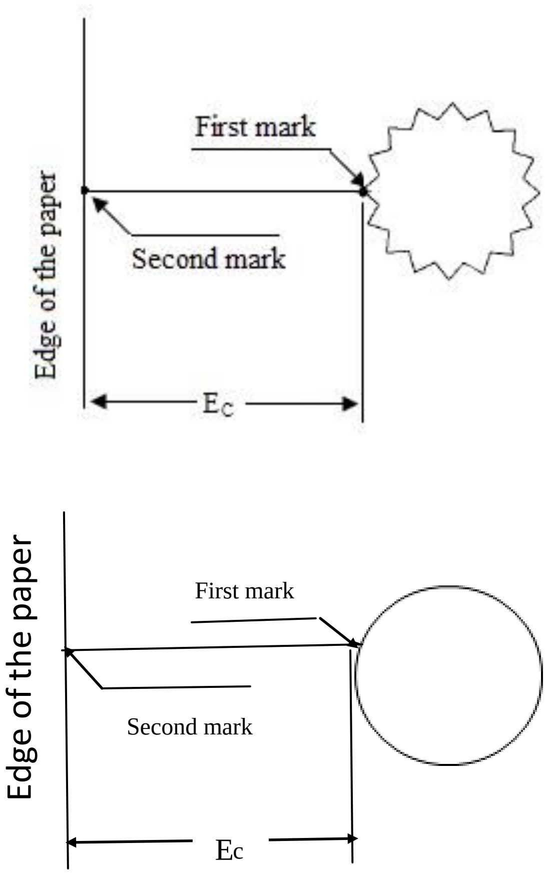

FIG. 3 DISTANCE OF FEED HOLE CENTRE FROM THE EDGE OF THE PAPER

A-5 CALCULATION

A-5.1 Average diameter of feed hole (mm)

$$D = \frac{\text{Sum of ten measurements}}{10}$$

A-5.2 Average distance between feed hole to feed hole (mm)

$$L = \frac{\text{Sum of ten measurements}}{10}$$

A-5.3 Distance between the feed hole centre and the edge of the paper for a single hole (mm)

$$E1 = \frac{D_F}{2} + E_C$$

A-5.4 Average distance between the feed hole centre and the edge of the paper (mm)

$$E = \frac{\text{Sum of ten readings of E1}}{10}$$

NOTES

1 As a precautionary measure ensure that in case of multipart paper carbon interleaved, the tacking lock cutting do not interfere with the holes.

2 While measuring all the dimensions related to the feed hole on a sample sheet or other sample sheets, it is preferable to measure all the dimensions for different holes in different positions covering both the edges of the sample sheets.

3 Any sample showing a variation of above ± 5 percent beyond permissible limit for any individual requirement not to be considered for calculation and deriving the average of readings at that point of time. Instead another sample shall be taken and this value (whatever the case may be) shall be taken for calculation of average value.

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Paper and its Products Sectional Committee, CHD 15

Organization	*Representative(s)*
Central Pulp and Paper Research Institute, Saharanpur	Dr M. K. Gupta (***Chairperson***)
Ballarpur Industries Limited, New Delhi	Shri Deepak Sharma Shri Bhushan Awate (*Alternate*)
Central Pulp & Paper Research Institute, Saharanpur	Dr A. K. Dixit Dr. Sanjay Tyagi (*Alternate* I) Shri Alok Kumar Goel (*Alternate* II)
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DPIIT, Min. of Commerce & Industry, New Delhi	Representative
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Indian Agro and Recycled Paper Mills Association, New Delhi	Dr B. P. Thapliyal Dr Anil Naithani (*Alternate*)
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Indian Recycled Paper Mills Association, New Delhi	Shri R. C. Rastogi
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Kumarrappa National Handmade Paper Institute, Jaipur	Miss Saakshy

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Stationery Office, Govt. of India, Kolkata	Shri Jalis Ahmed Shri Swapan Kanti Ghosh (*Alternate*)
Tamilnadu Newsprint and Papers Limited, Tamilnadu	Shri P. Sankaralingam Shri N. K. Periasamy (*Alternate*)
Voluntary Organization in Interest of Consumer Education, New Delhi	Shri M. A. U. Khan Shri H. Wadhwa (*Alternate*)
Whale Stationery Products Limited, New Delhi	Shri Mukesh Gupta Shri Gaurav Goel (*Alternate*)
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Scientist ‘D’/Joint Director
(Chemical Department), BIS

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